**FRAMBuilder**

**Program documentation & processing steps for preparing coded-wire tag data for Chinook FRAM base period calibration**

**The Chinook FRAM Base Period Workgroup, February 2016**



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1. **Background and purpose**

Although the Regional Mark Processing Center’s (RMPC) Regional Mark Information System (RMIS) contains considerable information about the recovery of Chinook salmon with coded-wire tags (CWT), considerable processing must occur in order to translate this information into currency that’s meaningful within a FRAM base period calibration context. Firstly, individual tag groups must be associated with a specific FRAM model stock. Secondly, tags recovered at a particular location (indicated by RMIS location code), time, and using a particular gear, must be mapped to one of FRAM’s model fisheries and time steps. The FRAMBuilder program and workflow described here was developed to fulfill these needs, among others. For instance, the program, and companion FRAM-CAS database, was modified to facilitate the preparation of inputs for estimating the parameters of the von Bertalanffy growth functions used by FRAM.

Early in the development of FRAMBuilder and the overall CWT mapping workflow, the base period workgroup (BPW) identified distinct advantages/benefits to leveraging the Pacific Salmon Commission’s Chinook Technical Committee’s (CTC) CWT analysis tools (i.e., the Cohort Analysis System [CAS] mapping program and companion database) within a FRAM calibration context. The BPW ultimately decided to tie FRAMBuilder to the CTC world because this connection: (1) allows for the seamless integration of CTC ‘Auxiliary’ CWT files, agency-supplied/prepared files that supplement or correct known errors/gaps in RMIS’s CWT recovery information; (2) facilitates the efficient inclusion of screened/vetted CWT release groups (i.e., selected by CTC members with regional expertise) into the calibration database; and (3) increases the overlap in information driving models supporting the management decisions of the PSC, the Pacific Fishery Management Council (PFMC), and state–tribal co-managers. Additionally, given some overlap in the fishery assessment units used by the CTC and in FRAM, the integration of CAS into the FRAM calibration workflow offered efficiency in the form of an initial stage of RMIS-to-FRAM mapping. We provide only a brief sketch of the tools ‘borrowed’ from the CTC in this document and refer the reader accordingly to CTC resources for complete documentation on CAS.

1. **Overview of process (steps)**

Describe the process in general terms…

Step 1: Select tag groups

Step 2: Query RMIS for release/recovery data

Step 3: Load data into the CTC Filter database and query it for CAS inputs

Step 4: Load tags into CAS

Step 5: Run FRAMBuilder

Step 6: Export data for calibration input files

Other steps/functions

1. **Required programs and data files**

In addition to this user’s guide document, included in the Watershed model are the following files. Details on each are included in sections to follow.

**Data Files**

* **A list of tag codes:** for setting up queries, but also necessary for getting things squared in Filter DB.
* **CWT Release Information**: see query specs below…
* **CWT Recovery Information**: see query details below…
* **Auxiliary files:** These are from the CTC….

**Databases**

* **The CTC’s CWT filter database:** Which year!!!
* **A FRAM-modified CAS database**: WHICH YEAR!!!

**Programs**

* **FRAMBuilder:** Which year!!!
* **The CTC’s CAS (and dll)**: WHICH YEAR!!! What DLLs?
* **Visual Studio, version 2008+**: This is needed because FRAMBuilder is a beta program, not a production/release program
* **Others**:To analyze data for fitting VBGFs…R, OpenBUGS, etc…

1. **Step 1: Select tag groups**

Give a general concept, not a lot of detail, include some notes about rationale of using CTC…

1. **Step 2: Query RMIS for release/recovery data**

This should include user-specified list…

1. **Step 3: Filter RMIS data for importing to CAS**

This should include user-specified list…

1. **Step 4: Load filtered CWT data into CAS**

Sketch process, refer reader to CAS specs, etc. Troubleshooting BADs; cover auxiliaries as a sub-heading…including preparation of special ones (e.g., Jon’s, LCN, etc.)

1. **Step 5: Run FRAMBuilder**

Here, cover the options, etc…describe the mapping rules, etc. WEIGHTING!!!!

1. **Step 6: Export data**

Sketch process, refer reader to CAS specs, etc. Troubleshooting

1. **Other FRAMBuilder functions/features**

Preparing data for analyzing growth…

1. **Limitations to FRAMBuilder and opportunities for enhancement**

Sketch process, refer reader to CAS specs, etc. Troubleshooting

**Appendix A. Notes and exceptions for specific stock processing**

e.g., ageing up by one year Willamette and CKL spring Chinook…origin is in the old FRAMBuilder program (Kurt Reidinger)

**Appendix B. Overview of the FRAM-modified CAS database**

Sketch process, refer reader to CAS specs, etc. Troubleshooting